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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/663,516	09/15/2000	Gary A. Beaudry	GA0129C	2805

24536 7590 10/03/2003

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EXAMINER	
MYERS, CARLA J	

ART UNIT	PAPER NUMBER
1634	

DATE MAILED: 10/03/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/663,516	BEAUDRY ET AL.	
	Examiner	Art Unit	
	Carla Myers	1634	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *25 June 2003* .

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-43* is/are pending in the application.

4a) Of the above claim(s) *1-20,23-29,31,34,38 and 42* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *21,22,30,32,33,35-37,39-41 and 43* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: .

DETAILED ACTION

1. This action is in response to the amendments filed June 25, 2003 and March 5, 2003. Applicants arguments have been fully considered but are not persuasive to overcome all grounds of rejection. All rejections not reiterated herein are hereby withdrawn. This action is made final.

Election/Restrictions

2. This application contains claims 1-20, 23-29, 31, 34, 38, and 42 drawn to an invention nonelected with traverse in Paper No. 13 A complete reply to the final rejection must include cancellation of nonelected claims or other appropriate action (37 CFR 1.144) See MPEP § 821.01. In the response of Paper No. 13 Applicant did not traverse the restriction required and thereby the restriction required is considered to be an election without traverse. The elected invention as detailed in the previous office is limited to methods for detecting lung cancer by identifying an agent that binds to a **protein**. In the present amendment, Applicants have amended the claims to include methods of detecting a transcript as well as a peptide. The subject matter of detecting a transcript is withdrawn as being drawn to a non-elected invention. Furthermore, the claims include non-elected sequences of SEQ ID NO: 14-16, 29, 32-34 and 38. In response to this Office action, Applicants are required to cancel the nonelected claims and non-elected subject matter from the claims. Again, it is noted that Applicants did not traverse the previous restriction requirement, particularly the restriction between methods of diagnosing lung cancer by detecting nucleic acids and methods of diagnosing lung cancer by detecting proteins. Accordingly, the present claims have

been examined only to the extent that they read on methods of detecting lung cancer by detecting a complex formed between an agent and a peptide, wherein the peptide is encoded by SEQ ID NO: 35.

Claim Rejections - 35 USC § 112

3. The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claims 21, 22 and newly added claims 30, 32, 33, 35-37, 39-41 and 43 are rejected under 35 U.S.C. 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention.

The claims are drawn to a method for detecting a lung cancer cell wherein said methods comprise contacting a sample suspected of containing a lung cancer cell with an agent that binds to a peptide produced by a larger or full-length fragment containing the polynucleotide of SEQ ID NO: 35 and detecting any peptide:agent complex as indicative of the presence of a lung cancer cell. The specification teaches methods of performing SAGE to detect the presence of nucleic acids expressed in lung cancer cells. In particular, the specification teaches that the 10 mer of SEQ ID NO: 35 is expressed in lung cancer cells (see Table II). The specification (page 49) also states that "Table I and II summarize the comparative SAGE analyses of cDNA clones derived from the lung cancers of two individuals and the lungs of two normal individuals." However, the specification does not provide any data concerning the expression of

peptides encoded by this 10 mer fragment and does not provide any information as to the whether the 10 mer fragments or peptides encoded by said fragments are present in other types of normal cells. There is no evidence provided in the specification to indicate that the 10 mer fragment is exclusively expressed in lung cancer cells. Thereby it has not been established that the presence of peptides encoded by the 10 mer fragment would be diagnostic of the presence of lung cancer cells. It is highly unpredictable as to whether a fragment encoding only 3 amino acids could be used to detect the presence of lung cancer cells. The claims are further inclusive of using agents which bind to "a gene product produced from a polynucleotide comprising a polynucleotide sequence obtained by identification of larger fragment or full length coding sequence" of SEQ ID NO: 35. However, the specification has not identified any larger length or full length nucleic acids comprising SEQ ID NO: 35 which are specifically expressed by lung cancer cells, such that the presence of the encoded peptide would distinguish lung cancer cells from other types of cells. The identification of larger length or full length polynucleotides comprising SEQ ID NO: 35 constitutes a research project. Accordingly, it would require undue experimentation to practice the claimed invention because this would necessitate screening the human genome and the genomes of other organisms for the presence of nucleic acids which comprise SEQ ID NO: 35, isolating the larger length or full length molecules, and assaying such molecules to determine whether they encode for proteins which are specifically expressed in lung cancer cells and not expressed in normal cells. The specification does not provide any information regarding the length, structure or functional activity of the larger or full-length polynucleotide or the

peptide encoded thereby. Case law has established that "(I)t is the specification, not the knowledge of one skilled in the art that must supply the novel aspects of the invention in order to constitute adequate enablement" (*Genetech Inc. v Novo Nordisk* 42 USPQ2d 1001). In the instant case, the specification has not fulfilled this requirement because the specification has not taught or provided adequate guidance for one to obtain full length or larger length molecules comprising SEQ ID NO: 35 and has not adequately taught one of skill in the art how to detect the presence of a lung cancer cell by detecting a peptide encoded by a larger length or full length molecule comprising SEQ ID NO: 35.

RESPONSE TO ARGUMENTS:

In the response filed March 5, 2003, Applicants traverse this rejection by stating that methods and kits are known for identifying full length or larger molecules. Applicants argue that sufficient guidance is provided in the specification for obtaining full length molecules which comprise SEQ ID NO: 35 and thereby Applicants are enabled for methods of detecting a lung cancer cell by detecting a peptide encoded by a polynucleotide comprising SEQ ID NO: 35.

Applicant's arguments have been fully considered but are not persuasive. While techniques are known in the art for synthesizing DNA, extending DNA, and detecting DNA, knowledge of such general methods does not lead one to specific peptides associated whose expression is associated with lung cancer. Extensive experimentation would be required to identify which nucleic acids in the complete human genome and in the genome of all other organisms contain the 10 mer of SEQ ID

NO: 35 and which of this vast number of nucleic acids is associated with the occurrence of lung cancer. As discussed in detail above, the specification has not established that peptides encoded by SEQ ID NO: 35 are associated with lung cancer. Further, the specification has not identified a single peptide encoded by a polynucleotide comprising SEQ ID NO: 35 which is expressed in or over-expressed in lung cancer as compared to normal lung cells. Also as discussed in the above rejection, case law has established that "(I)t is the specification, not the knowledge of one skilled in the art that must supply the novel aspects of the invention in order to constitute adequate enablement" (*Genetech Inc. v Novo Nordisk* 42 USPQ2d 1001). Inventions must be available to the public as of the filing date of the application. The requirement to perform extensive experimentation, even using well known techniques, does not provide the public with an invention in currently useable form. Clearly, in the present case, Applicants have not provided the novel aspects of the invention since the invention requires the practioner to search for polynucleotides comprising the 10 mer of SEQ ID NO: 35 and then determine which of these currently uncharacterized polynucleotides is associated with the occurrence of lung cancer.

4. Claims 21, 22 and newly added claims 30, 32, 33, 35-37, 39-41 and 43 are rejected under 35 U.S.C. 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

The claims are drawn to a method for detecting a lung cancer cell wherein said methods comprise contacting a sample suspected of containing a lung cancer cell with an agent that binds to a peptide produced by a larger or full-length fragment containing the polynucleotide of SEQ ID NO: 35 and detecting any peptide:agent complex as indicative of the presence of a lung cancer cell. While isolated nucleic acids consisting of the sequence of SEQ ID NO: 35 meet the written description requirements of 35 U.S.C. 112, first paragraph, the specification does not disclose and fully characterize the claimed genus of polynucleotide sequences "comprising a polynucleotide sequence obtained by identification of larger fragment or full length coding sequences" of SEQ ID NO: 35 . *Vas-Cath Inc. V. Mahurkar*, 19 USPQ2d 1111, clearly states that "applicant must convey with reasonable clarity to those skilled in the art that, as of the filing date sought, he or she was in possession of the invention. The invention is, for purposes of the 'written description' inquiry, whatever is now claimed". Applicant is reminded that *Vas-Cath* makes clear that the written description provision of 35 U.S.C. 112 is severable from its enablement provision. In *The Regents of the University of California v. Eli Lilly* (43 USPQ2d 1398-1412), the court held that a generic statement which defines a genus of nucleic acids by only their functional activity does not provide an adequate written description of the genus. The court indicated that while Applicants are not required to disclose every species encompassed by a genus, the description of a genus is achieved by the recitation of a representative number of DNA molecules, usually defined by a nucleotide sequence, falling within the scope of the claimed genus. At section B(1), the court states that "An adequate written description of a

DNA...'requires a precise definition, such as by structure, formula, chemical name, or physical properties', not a mere wish or plan for obtaining the claimed chemical invention". Accordingly, knowledge of the sequence of the 10 mer fragment of SEQ ID NO: 35 does not allow the skilled artisan to envision all of the contemplated larger and full-length nucleic acids comprising SEQ ID NO: 35. The claimed polynucleotides have not been sufficiently described in terms of their structural properties (length, identity of flanking nucleotide sequences, etc) or functional properties (e.g., activity of the encoded peptide). The specification does not teach any members of the genus of molecules of larger fragment or full-length molecules comprising SEQ ID NO: 35. Accordingly, Applicants have not provided sufficient evidence that they were in possession, at the time of filing, of the invention as it is broadly claimed and thus the written description requirement has not been satisfied for the claims as they are broadly written. Applicants attention is drawn to the Guidelines for the Examination of Patent Applications under 35 U.S.C. 112, ¶ 1 "Written Description" Requirement, Federal Register, Vol. 66, No. 4, pages 1099-1111, Friday January 5, 2001.

RESPONSE TO ARGUMENTS:

In the response filed March 5, 2003, Applicants traverse this rejection for essentially the same reasons stated in paragraph 3 above. by stating that methods and kits are known for identifying full length or larger molecules. Applicants argue that because they have described a 10 mer consisting of SEQ ID NO: 35 and because methods are known in the art for extending a nucleic acid sequence, Applicants have described larger sequences or full length coding sequences comprising SEQ ID NO: 35.

Applicant's arguments have been fully considered but are not persuasive. Applicants teaching of a 10 mer does not provide basis for a showing of all proteins encoded by a nucleic acid comprising a 10 mer wherein said protein is associated with lung cancer. While methods are known for synthesizing nucleic acids, this is not the criteria that one uses to determine whether applicants were in possession of the claimed invention at the time the invention was filed. Applicants have not described in terms of structure and/or function a single protein that is associated with lung cancer. Nor have applicants adequately described a representative number of members within the claimed genus of proteins comprising the 3 amino acids encoded by SEQ ID NO: 35 wherein the proteins are associated with lung cancer. What is the length of such a protein? What is the sequence of amino acids flanking the peptide encoded by SEQ ID NO: 35 in the uncharacterized proteins? What is the function of the encoded protein? Is the resulting protein over-expressed or under-expressed in lung cancer? Clearly, a teaching that a protein comprises 3 specific amino acids does not provide an adequate written description of the complete protein. As discussed in the above rejection, that "An adequate written description of a DNA...'requires a precise definition, such as by structure, formula, chemical name, or physical properties', **not a mere wish or plan for obtaining the claimed chemical invention**" (*The Regents of the University of California v. Eli Lilly* (43 USPQ2d 1398-1412)).

5. THE FOLLOWING ARE NEW GROUNDS OF REJECTION NECESSITATED BY APPLICANTS AMENDMENTS TO THE CLAIMS:

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 32, 33, 35, 36, 37, 39, 40, 41 and 43 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claims 32, 33, 35, 36, 37, 39, 40, 41 and 43 are indefinite over the recitations of "a SAGE tag as shown in SEQ ID NO:" and "the SAGE tag as shown in SEQ ID NO:" because the SEQ ID NO's represent nucleotide sequences and there is nothing within the SEQ ID NO which denotes a SAGE tag. The claims do not clarify the relationship between the SAGE tags and the nucleotide sequences set forth in each SEQ ID NO. Accordingly, it is not clear as to what is intended to be include by the SAGE tags shown in the SEQ ID NO's. Furthermore, the phrase "the SAGE tag" in claims 36, 37, 39, 40, 41 and 43 lacks proper antecedent basis.

Claims 36, 37, 39, 40, 41 and 43 are indefinite over the recitation of "the normal lung cell" because this phrase lacks proper antecedent basis.

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the

shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Carla Myers whose telephone number is (703) 308-2199. The examiner can normally be reached on Monday-Thursday from 6:30 AM-5:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Gary Benzion, can be reached on (703)-308-1119. Papers related to this application may be faxed to Group 1634 via the PTO Fax Center using the fax number (703)-872-9306.

Any inquiry of a general nature or relating to the status of this application should be directed to the receptionist whose telephone number is (703) 308-0196.
Carla Myers
October 1, 2003

CARLA J. MYERS
PRIMARY EXAMINER